UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,668	06/25/2001	Meng Yao	A1265-US-NP	8867

37211	7590	10/04/2006	EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/888,668	YAO, MENG
	Examiner	Art Unit	
	Peter K. Huntsinger	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____.

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 7/28/06 have been fully considered but they are not

persuasive.

The applicant argues on pages 12-16 of the response in essence that:

The adjacency criterion does not teach the checkerboard constraining of a

stochastic screen.

a.   Stanich et al. disclose placing black pixels adjacently (col. 5, lines 23-36)

starting with zero black pixels (col. 5, lines 19-20). The screen is considered

stochastic because the subsequent black pixel is placed randomly based on the

clustering criteria (col. 6, lines 22-23). The applicant argued that Fig. D of the

response represents an adjacent criteria of Stanich et al., however Stanich et al.

disclose forming the screen starting with zero black pixels (col. 5, lines 19-20).

Therefore, black pixels would not be placed vertically or horizontally adjacent

until after a specific gray level (col. 3, lines 30-33) and thus Fig. D would not

occur under this embodiment of Stanich et al.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

3.   Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by Stanich et al.

Patent 6,597,813.

Referring to claim 6, Stanich et al. disclose a method of generating a halftone

screen for converting an image received at d levels, for reproduction at c levels, where

d>c, the method, in optional sequence, including generating a first initial stochastic

screen pattern for a first gray level (col. 6, lines 22-23), the initial stochastic screen

pattern being constrained by a checkerboard pattern such that a black pixel in the first

initial check board pattern constrained stochastic screen pattern is positioned in the first

initial checkerboard pattern constrained stochastic screen pattern at a pixel position

corresponding to a black pixel position in the checkerboard pattern (block 21 of Fig. 2,

col. 5, lines 9-37); generating a plurality of subsequent first checkerboard pattern

constrained stochastic screen patterns, each subsequent first checkerboard pattern

constrained stochastic screen pattern corresponding to a specific gray level that is

darker than the first gray level and is lighter than a second gray level, the second gray

level being darker than the first gray level, each subsequent first checkerboard pattern

constrained stochastic screen pattern maintaining an arrangement of black pixels of the

first initial checkerboard pattern constrained stochastic screen pattern, each subsequent

first checkerboard pattern constrained stochastic screen pattern including a number of

additional black pixels such that a total number of black pixels in a subsequent first

checkerboard pattern constrained stochastic screen pattern is greater than a number of

black pixels in the initial checkerboard pattern constrained stochastic screen pattern,

each additional black pixel in the subsequent first checkerboard pattern constrained

stochastic screen pattern being positioned in the subsequent first checkerboard pattern

constrained stochastic screen pattern at a pixel position corresponding to a black pixel

position in the checkerboard pattern (block 25 of Fig. 2, col. 5-6, lines 60-67, 1-6) (block

28 of Fig. 2, col. 6, lines 6-16); generating a second checkerboard pattern constrained

stochastic screen pattern, the second checkerboard pattern constrained stochastic

screen pattern corresponding to a second gray level, the second checkerboard pattern

constrained stochastic screen pattern maintaining the arrangement of black pixels of the

first initial checkerboard pattern constrained stochastic screen pattern, the second

checkerboard pattern constrained stochastic screen pattern including a number of

additional black pixels such that a total number of black pixels in the second

checkerboard pattern constrained stochastic screen pattern is greater than a number of

black pixels in the initial checkerboard pattern constrained stochastic screen pattern,

each additional black pixel in the second checkerboard pattern constrained stochastic

screen pattern being positioned in the second checkerboard pattern constrained

stochastic screen pattern at a pixel position corresponding to a black pixel position in

the checkerboard pattern (block 42 of Fig. 3, col. 6, lines 22-28); generating a plurality

of subsequent second checkerboard pattern constrained stochastic screen patterns,

each subsequent second checkerboard pattern constrained stochastic screen pattern

corresponding to a specific gray level that is darker than the second gray level and is

lighter than a third gray level being darker than the second gray level, each subsequent

second checkerboard pattern constrained stochastic screen pattern maintaining the

arrangement of black pixels of the second initial checkerboard pattern constrained

stochastic screen pattern, each second checkerboard pattern constrained stochastic

screen pattern including a number of additional black pixels such that a total number of

black pixels in the second checkerboard pattern constrained stochastic screen pattern is

greater than a number of black pixels in the initial checkerboard pattern constrained

stochastic screen pattern, each additional black pixel in the second checkerboard

pattern constrained stochastic screen pattern being positioned in the second

checkerboard pattern constrained stochastic screen pattern at a pixel position

corresponding to a white pixel position in the checkerboard pattern (block 46 of Fig 3.,

col. 6, lines 39-43)

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-5, and 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Stanich et al. Patent 6,597,813 and in further view of Chen et al. Patent 4,668,995.

Referring to claims 1 and 9, Stanich et al. disclose a halftone processor for

converting a gray scale image comprising a plurality of m-bit pixels to a halftoned image

comprising a plurality of n-bit pixel images, where m > n the processor comprising: a

memory storing a stochastic screen (dither mask 13 of Fig. 1, col. 4, lines 11-17), the

stochastic mask being a stochastic screen (col. 6, lines 22-23) constrained by a

checkerboard pattern (col. 6, lines 58-67), the checkerboard pattern constrained

stochastic screen comprising a set of threshold values, each threshold value in the

checkerboard pattern constrained stochastic screen corresponding to a gray level, each

threshold value corresponding to a gray level between a first gray level (g_{s1}) and a

second gray level (g_{s2}) being positioned in the checkerboard pattern constrained

stochastic screen at a pixel position corresponding to a black pixel position in the

checkerboard pattern, each threshold value corresponding to a gray level between the

second gray level (g_{s2}) and a third gray level (g_{s3}) being positioned in the checkerboard

pattern constrained stochastic screen at a pixel position corresponding to a white pixel

position in the checkerboard pattern (col. 3, lines 29-37), and a comparator receiving

the gray scale image and the set of threshold values corresponding to the checkerboard

pattern constrained stochastic screen, the comparator comparing, on a pixel-by-pixel

basis, a value of each pixel in the gray scale image to a corresponding threshold value

in the checkerboard pattern constrained stochastic screen to produce the halftoned

image (comparator 14 of Fig. 1, col. 4, lines 14-16). Stanich et al. do not disclose

expressly memory storage for the stochastic screen. It is inherent that the stochastic

screen of Stanich et al. would need to be stored on RAM for the screen to be applied to

the image and the halftoning process to be preformed. Stanich et al. disclose not

placing pixels vertically or horizontally adjacent to each other until after a gray level

threshold (col. 5, lines 30-36). Utilizing the checkerboard pattern (col. 5, lines 16-19),

this limits using a constrained checkerboard pattern until a gray level threshold is

reached. A checkerboard pattern of with black pixels at every 45-degree angle pixel

(col. 6, lines 61-66) would correspond to a 50% dither. Stanich et al. disclose a gray

level of 0 corresponds to 0% black and a gray level of g_i corresponds to 100% black.

Stanich et al. do not disclose expressly wherein the first gray level (g_{s1}) being greater

than the second gray level (g_{s2}), the second gray level (g_{s2}) being greater than the third

gray level (g_{s3}), the third gray level (g_{s3}) corresponding to a black dither of 50% or less

for gray levels (g_s) wherein x < g_s < y, x corresponding to 100% black, y corresponding

to 0% black. Chen et al. disclose wherein x corresponding to 100% black, y

corresponding to 0% black (Fig. 3, col. 6, 57-60). Stanich et al. and Chen et al. are

combinable because they are from the same field of halftoning. At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to assign a

gray level of 0 to 100% black and the greatest gray level to 0% black. The motivation

for doing so would have been to count the number of white pixels instead of the number

of black pixels for calculating a gray value. Therefore, it would have been obvious to

combine Chen et al. with Stanich et al. as specified in claims 1 and 9.

Referring to claims 3, 7, and 10, Stanich et al. disclose threshold values

corresponding to gray levels for constraining a checkerboard pattern but do not disclose

expressly a specific percent black dither that correspond to the gray levels. Chen et al.

disclose a specific gray level value of approximately 5% (level 15 of Fig. 3) and a

specific gray level of approximately 40% (level 10 of Fig. 3). At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to assign

thresholds between a 5% black dither and a 40% black dither to a first gray level group. The motivation for doing so would have been to eliminate objectionable periodic patterns in the halftone and thus increase image quality (col. 8, lines 3-24 of Stanich). Further, Stanich et al. disclose a generic gray level from which to switch patterns and 5% and 40% are simply two of many specific gray levels. Therefore it would have been obvious to combine Chen et al. with Stanich to obtain the invention as specified in claims 3, 7, and 10.

Referring to claims 4, 8, and 11, Stanich et al. disclose threshold values corresponding to gray levels for constraining a checkerboard pattern but do not disclose expressly a percent black dither that correspond to the gray levels. Chen et al. disclose a specific gray level value of approximately 40% (level 10 of Fig. 3) and a specific gray level of approximately 50% (level 8 of Fig. 3). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to assign thresholds between a 40% black dither and a 50% black dither to a second gray level group. The motivation for doing so would have been to eliminate objectionable periodic patterns in the halftone and thus increase image quality (col. 8, lines 3-24 of Stanich). Further, Stanich et al. disclose a generic gray level from which to switch patterns and 40% and 50% are simply two of many specific gray levels. Therefore it would have been obvious to combine Chen et al. with Stanich to obtain the invention as specified in claims 4, 8, and 11.

Referring to claim 5, Stanich et al. disclose threshold values corresponding to gray levels for constraining a checkerboard pattern but do not disclose expressly a

percent black dither that correspond to the gray levels. Chen et al. disclose a specific

gray level value of approximately 5% (level 15 of Fig. 3), a specific gray level of

approximately 40% (level 10 of Fig. 3), and a specific gray level of approximately 50%

(level 8 of Fig. 3). At the time of the invention, it would have been obvious to a person

of ordinary skill in the art to assign thresholds between a 5% black dither and a 40%

black dither to a first gray level group, and thresholds between a 40% black dither and a

50% black dither to a second gray level group. The motivation for doing so would have

been to eliminate objectionable periodic patterns in the halftone and thus increase

image quality (col. 8, lines 3-24 of Stanich). Further, Stanich et al. disclose a generic

gray level from which to switch patterns and 5%, 40%, and 50% are simply three of

many specific gray levels. Therefore it would have been obvious to combine Chen et al.

with Stanich to obtain the invention as specified in claim 5.

Referring to claims 12 and 14, Stanich et al. disclose threshold values

corresponding to gray levels for constraining a checkerboard pattern but do not disclose

expressly a percent black dither that correspond to the gray levels. Chen et al. disclose

a specific gray level of approximately 40% (level 10 of Fig. 3). At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to assign a

threshold of 40% to a gray level group. The motivation for doing so would have been to

eliminate objectionable periodic patterns in the halftone and thus increase image quality

(col. 8, lines 3-24 of Stanich). Further, Stanich et al. disclose a generic gray level from

which to switch patterns and 40% is simply one of many specific gray levels. Therefore

it would have been obvious to combine Chen et al. with Stanich to obtain the invention

as specified in claims 12 and 14.

Referring to claims 13 and 15, Stanich et al. disclose threshold values

corresponding to gray levels for constraining a checkerboard pattern but do not disclose

expressly a percent black dither that correspond to the gray levels. Chen et al. disclose

a specific gray level of approximately 15% (level 14 of Fig. 3). At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to assign a

threshold of 15% to a gray level group. The motivation for doing so would have been to

eliminate objectionable periodic patterns in the halftone and thus increase image quality

(col. 8, lines 3-24 of Stanich). Further, Stanich et al. disclose a generic gray level from

which to switch patterns and 15% is simply one of many specific gray levels. Therefore

it would have been obvious to combine Chen et al. with Stanich to obtain the invention

as specified in claims 13 and 15

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

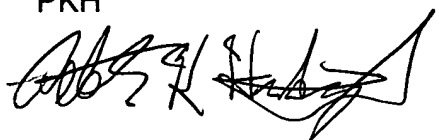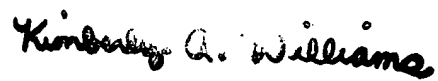than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Peter K. Huntsinger whose telephone number is

(571)272-7435. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kimberly Williams can be reached on (571)272-7471. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PKH

KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER